Amendments to the Specification:

Please replace the two paragraphs beginning at page 7, line 2, with the following redlined paragraphs:

An embodiment of the invention provides a pressure enclosure, including a pressure ~~chamber~~ body having an opening, a first member coupled to the pressure body ~~chamber~~ in a position over the opening, a second member positioned between the pressure body ~~chamber~~ and the first member and covering the opening, and a load chamber defined by a space between the first and second members. The load chamber is configured such that pressure in the load chamber acting on respective surfaces of the first and second members biases the second member against the pressure body ~~chamber~~ over the opening, thereby maintaining a seal between pressure body ~~chamber~~ and the second member.

The load chamber may be further configured to remain pressurized independent of the pressure in the pressure body~~chamber~~. The load chamber may also be configured such that a pressure in the load chamber of less than the pressure in the pressure body ~~chamber~~ is sufficient to bias the second member against the pressure body ~~chamber~~ to maintain the seal. According to one embodiment, the pressure in the load chamber may be less than around 75% of the pressure in the pressure body~~chamber~~. According to other embodiments, the pressure in the load chamber may fall in a range of between 75% to less than around 10% of the pressure in the pressure body~~chamber~~.

Please replace the paragraph beginning at page 9, line 15, with the following redlined paragraph:

Figure 5 illustrates a pump head 150 according to a first embodiment of the invention. The pump head 150 includes an end cap 152, a valve body 154, a pressure body, which in this case is a cylinder 102, and a plunger 104. Tie rods 172 receive tie rod nuts 174 and thrust washers 112 to apply force to the end cap 152, which in turn holds the valve body 154 in position against the cylinder 102. Static seal 156 is formed where the cylinder 102 meets the valve body 154. O-rings 158 provide seals at various points between the valve body 154 and the end cap 152. During an intake stroke of the plunger 104, fluid enters the cylinder 102 via the inlet port 160. Pressurized fluid exits the cylinder 102 via the outlet port 162 during the

pressurizing stroke of the plunger 104 (inlet and outlet check valves configured to control the flow of fluid entering and exiting the cylinder are not shown).

Please replace the paragraph beginning at page 10, line 3, with the following redlined paragraph:

According the principles of the invention, a load chamber 164 is provided between the valve body 154 and the end cap 152. A load chamber inlet port 166 provides access to the load chamber 164. Tie rod nuts 174 are installed with a nominal torque of between 25 and 50 foot-pounds onto the tie rods 172. The load chamber 164 is pressurized to a selected operating pressure via the load chamber inlet 166. The load chamber 164 is bordered on the top by the end cap 152 and on the bottom by a shoulder 170 of the valve body 154. When the load chamber 164 is pressurized by a pressure source 178, the pressure pushes the end cap 152 upward against the thrust washers 112 and tie rod nuts 174, and presses downward on the shoulder 170 of the valve body 154 against the static seal 156.

Please replace the paragraph beginning at page 11, line 18, with the following redlined paragraph:

The downward force exerted on the valve body 154 by the pressure of the load chamber 164 may be calculated by multiplying the pressure in the load chamber 164 by the surface area of the shoulder 170 of the valve body 154. Appropriate values for these parameters may be expressed in the following formula:

$$P_L A_L = P_C A_C M \qquad \text{Formula 1}$$

where P_C is the maximum pressure in the cylinder, A_C is the surface area of bottom face 168 of the valve body 154, P_L is the operating pressure in the load chamber, A_L is the surface area of the shoulder 170 of the valve body 154, and M is a selected margin of safety factor, which may be any value above unity.

Please replace the paragraph beginning at page 12, line 1, with the following redlined paragraph:

It will be clear to those of ordinary skill in the art that the valve body 154 may be configured to have a surface area A_L on the shoulder 170 that is much greater than the surface area of the bottom face 168 of the valve body 154, and to the degree that the surface A_L of the shoulder 170 is greater than the surface area A_C of the bottom face 168, the pressure P_L of the load chamber 164 may be proportionately lower than the pressure P_C of the cylinder 102. The minimum pressure P_L of the load chamber 164 may be calculated using the following formula, derived from formula 1:

$$P_L = \frac{P_C A_C M}{A_L} \qquad \text{Formula 2}$$

Thus, for example, given a maximum cylinder pressure P_C of 80,000 psi, an area A_c of 1.5 square inches, an area A_L of 10 square inches, and a margin M of 1.5, the minimum <u>operating</u> pressure P_L of the load chamber may be calculated as follows:

$$\frac{(80K)(1.5)(1.5)}{10} = 18K \qquad \text{Formula 3}$$

Please replace the paragraph beginning at page 13, line 13, with the following redlined paragraph:

The advantages of the invention over prior methods of achieving the necessary loads are several. First, the tie rod nuts 110 may be installed at a relatively low torque. For example, a torque of around 25 ft-lbs may be adequate, which is a simple task when compared to the 700 ft-lbs of the prior method. The force exerted by the pressurized load chamber 164 on the valve body is independent of the exact distribution of tensile load exerted on the tie rods 172 by the torque nuts 174. Thus, unequal tensile loads on the tie rods are balanced, ensuring that the force of the valve body 154 is equally distributed on the static seal 156 and cylinder 102. Second, when the pressure in the load chamber is released, the torque required to remove the tie rod nuts 174 is the same nominal torque used to install them, resulting in significant reduction in time and effort needed to disassemble or reassemble the pump head 150. Third, because the load chamber 164 may be configured to exert sufficient downward force on the static seal 156 under

pressures that are significantly lower than the output pressure of the pump 150, seals 158, configured to maintain pressure in the load chamber 164 are not required to operate at the same high pressures as the static seals 156. Additionally, again, because of the lower pressures required in the ~~pressure~~ load chamber 164, supply and compression lines configured to supply pressure to the load chamber 164 need not be as robust.

Please replace the paragraph beginning at page 14, line 3, with the following redlined paragraph:

It is desirable that the load chamber 164 remain pressurized even while the pump is not in operation, inasmuch as continuous cycling of pressure in the load chamber 164 may cause unnecessary fatigue to the pump components. Accordingly, a check valve 176 is shown schematically in Figure 5 coupled between the pressure source 178 and the load chamber inlet 166. The check valve is configured to maintain pressure at an operating pressure of a selected level in the load chamber 164. When necessary, such as for servicing of the pump, pressure in the load chamber 164 may be easily released by loosening of a fitting to the load chamber inlet. Alternatively, the load chamber 164 may include a pressure release fitting (not shown). Check valves are well known in the art, and any of a wide variety of types may be used in this application.

Please replace the paragraph beginning at page 16, line 16, with the following redlined paragraph:

Figure 9 illustrates a pump head 220 according to an additional embodiment of the invention. In addition to features previously described, the pump head 220 includes an outlet chamber 274 configured to receive pressurized fluid from the cylinder 102, an outlet passage 278, a pressure loading cap 222, and a load chamber 224 formed therein. A pressure transmitting member 226 is positioned within the load chamber 224, and a pressure input port 228 is provided. A pressure source 230, external to, and independent of pressure from the pump, provides pressure to the load chamber 224 via a check valve 176, and the pressure input port 228. Prior to operation of the pump 220, the load chamber 224 is pressurized by the pressure source 230. The pressure transmitting member 226 transmits the force in the load chamber 224

to an upper surface 232 of the end cap 223, which force loads the tie rods 108, and biases the static seal ~~116~~156. The surface area of the pressure transmitting member 226, where the member bears against the upper surface 232 of the end cap 106, is selected to be greater than the surface area of the bottom surface 172 of the valve body. Accordingly, as previously described, the pressure required within the load chamber 224 is correspondingly less than the pressure produced within the cylinder 102. Thus, seals, linkages, and conduits, between the pressure source 230 and the load chamber 224, may be correspondingly less robust than otherwise required, and accordingly less expensive to produce and maintain.